

REMARKS

Claims 1-10 are pending in this application. Claims 1, 9 and 10 are independent claims. By this amendment, claim 1 is amended and new claims 8, 9 and 10 are added. Reconsideration in view of the above amendments and following remarks is respectfully solicited.

I. THE CLAIMS DEFINE PATENTABLE SUBJECT MATTER

The Office Action rejects claims 1-7 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 5,818,527 to Yamaguchi et al. (hereafter Yamaguchi). This rejection is respectfully traversed.

Claim 1, as amended, recites, a digital image shooting device having an image forming lens and an image sensor element; a data processing unit for processing an output signal from the image sensor element into digital image data; an image memory for storing the digital image data and a lens characteristic relating to the image forming lens; a lens characteristic correction unit for performing, by using the stored lens characteristic of the image forming lens and a position of a frame image photographed, a process of correcting a deterioration of an image quality derived from the image forming lens upon the entire digital image data, wherein the image quality deterioration corrected by said lens characteristic correction unit is at least one of a chromatic aberration of magnification, defocusing and a decrease in marginal lumination.

Embodiments of the present invention provide a digital image shooting apparatus which includes a lens characteristic correction unit for performing a process of correcting an image quality deterioration derived from the image forming lens upon the digital image data and also caused by a low cost digital camera which

operates using a lower performance lens. This correction of image quality is performed using a lens characteristic of the image forming lens and a position of a photographed frame image.

As provided in the claimed invention, the lens characteristic correction unit corrects deterioration of an image quality originating from the lens by using both the stored lens characteristics of the image forming lens and an image position. In other words, the chromatic aberration of magnification, defocusing and decrease in marginal lumination, and/or the distortion aberration originating from a lens used is corrected, so that even when using a low-performance lens, the digital camera is able to output a high-quality image with stability.

In contrast to the present invention, Yamaguchi discloses an image processor 30B that uses two types of correction methods for an image on the image pickup surface 2A. The first correction method corresponds to the size of an effective image area (i.e., the image pickup surface 2A of the CCD 2) and performs the first correction for electrically correcting an optical distortion of the optical lens for only a central closed area of the image. A second method is used for a second closed area at the marginal side outside of the central closed area and corrects the position of the image data captured on the image pickup surface. (see Yamaguchi, col. 6, lines 24-48).

In other words, Yamaguchi discloses using two different correction methods for correcting, at most, optical distortion, i.e., one for the central portion and another method for the marginal portion of the image. (see Yamaguchi, col. 3, lines 56-60). However, Yamaguchi fails to teach or suggest correcting a chromatic aberration of magnification or correcting defocusing and a decrease in marginal lumination.

Therefore, Yamaguchi fails to teach or suggest the correction of said image quality deterioration corrected by the lens characteristic correction unit, is at least one of a chromatic aberration of magnification, defocusing and a decrease in marginal lumination, as recited in claim 1.

According to MPEP §2131, "a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. Of California*, 814 F.2d 628, 631, 2 USPQ2d 1051 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ...claims." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913 (Fed. Cir. 1989). The elements must be arranged as required by the claims, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

Applicant respectfully submits that the Office Action has failed to establish the required *prima facie* case of anticipation because the cited reference, Yamaguchi, fails to teach or suggest each and every feature as set forth in the claimed invention as recited in claim 1.

As for each of the dependent claims not particularly discussed above, these claims are allowable for at least the reasons set forth above. However, additional arguments are provided below with respect to dependent claims 3-7 further distinguishing them from the cited reference.

In regard to claim 3, applicant submits that the encoder 28 cited by the Examiner as providing the claimed compressing of digital data, is an NTSC encoder that converts an analog signal converted in a DA conversion circuit 7 to a picture signal to be

displayed on a screen 27A of a monitor 27, as illustrated in Fig. 8 and described at column 6, lines 1-6. Thus, the encoder does not perform a process of compressing a digital image signal as recited in claim 3.

Also, the image memory (20), as recited in claims 4 and 6, is a memory for storing the corrected image signal. In contrast, the image memory (5) of Yamaguchi, relied upon in the Office Action to provide the memory of claims 4 and 6, stores uncorrected image data. In Yamaguchi, the uncorrected image data stored in the image memory (5) is retrieved by referencing the correction information in a correction ROM 13B, sent to the interpolation circuit (6) to be interpolated into the corrected image data. The corrected image data is then sent to the DA conversion circuit (7) to be converted into an analog picture signal, and thereafter converted into a TV signal by the NTSC encoder (28) to be displayed on the screen 27A of the monitor 27. Following the above, an image processed by Yamaguchi is basically a motion picture, and its object is to generate the corrected image signal to be displayed on a TV monitor. Thus, the image memory (5) does not store the corrected image data. This is also apparent from the drawings in which the indicated direction of data (backwards arrow) is not shown from the interpolation circuit (6) to the image memory (5).

As to claim 5, Yamaguchi describes a built-in image recording medium, but is silent about a removable image recording medium. Thus, the features of claim 5 are not taught by Yamaguchi.

In regard to claim 7, the Office Action refers to Figs. 11 and 12, which show an image area Go in an ordinary state and an image area Go' of the uncorrected image captured by the CCD, respectively. The image area Go shows an image for an output where the corrected image data for output is to be written. These

drawings show that both the image area Go and the image area Go' have the same configuration. That is, Yamaguchi does not use an image pickup device with a larger area than the shooting area in consideration of the loss due to the correction, as set forth in claim 7, but, as illustrated from Fig. 9B, corrects only the central portion of the image area Go (Go'). Thus, the marginal portion is left uncorrected in order to avoid the missing image data due to the correction.

In view of the above, applicant respectfully submits that Yamaguchi fails to teach the features of the claimed invention. Accordingly, withdrawal of the rejection of claims 1-7 under 35 U.S.C. §102(e) is respectfully solicited.

II. CONCLUSION

In view of the foregoing, Applicant respectfully submits that the application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) respectfully petition(s) for a one (1) month extension of time for filing a reply in connection with the present application, and the required fee of \$110.00 is attached hereto.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact Chad J. Billings (Reg. # 48,917) at (703) 205-8000 to schedule a Personal Interview.

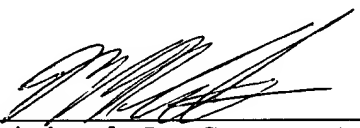
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If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment from or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §1.16 or under 37 C.F.R. §1.17; particularly, the extension of time fees.

Respectfully submitted,

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Marked-Up Version of Amendment

IN THE CLAIMS:

Claims 1 and 2 have been amended as follows:

1. (Amended) A digital image shooting device comprising:
an image forming lens;
an image sensor element;
a data processing unit for processing an output signal
from said image sensor element into digital image data;
an image memory for storing the digital image data and a
lens characteristic relating to the image forming lens; and
a lens characteristic correction unit for performing, by
using [a] the stored lens characteristic of said image forming lens
and a position of a frame image photographed, a process of
correcting a deterioration of an image quality derived from said
image forming lens upon the entire digital image data,
wherein said image quality deterioration corrected by
said lens characteristic correction unit is at least one of a
chromatic aberration of magnification, defocusing and a decrease in
marginal lumination.

2. (Amended) [A] The digital image shooting device
according to claim 1 wherein [the] said image quality deterioration
[corrected by said lens characteristic correction unit is at least
one of a chromatic aberration of magnification,] further includes a

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distortion aberration[, defocusing and a decrease in marginal
lumination].

New claims 8, 9 and 10 were added.